

XXX.—On the Geographical Distribution of the Genus *Cosmophila*, a Noctuid of the Family *Gonopteridæ*. By Colonel C. SWINHOE, M.A., F.L.S., &c.

[Plates IX. & X.]

Family *Gonopteridæ*.

Genus *COSMOPHILA*, Boisd.

Faun. Ent. Madagascar, p. 94 (1833).

Type, *xanthindyma*, Boisd. *l. c.*

A very interesting genus, well worth careful investigation. Heretofore, on account of the similarity of pattern, authors have put all the different forms from America to Australia, regardless of the localities, mostly under the American form *erosa*; in 'Moths of India,' ii. p. 411 (1894), Hampson puts *xanthindyma*, Boisd., from Madagascar, *indica*, Guen., from India, *auragoides*, Guen., from Natal, *variolorosa*, Walker, from North India, and *edentata* from Queensland all as synonyms of *erosa*, Hübner, from America.

Staudinger, in his Catalogue, 1901 edition, puts *xanthindyma*, *indica*, and *auragoides* under the American form.

Warren, in Seitz's 'Macrolepidoptera of the Palæarctic Region,' vol. iii. p. 359 (Nov. 1913), puts *auragoides*, *variolorosa*, and *edentata* as synonyms with *xanthindyma*; under *erosa* he puts *indica*.

The superficial pattern of all these is more or less the same, but there are differences. I could not get myself to believe that, notwithstanding the geographical distances, they could all be one and the same species, and consequently I got the Rev. C. R. N. Burrows, who is an expert on the genitalia of Lepidoptera, to examine specimens from many different parts of the globe, and I am very grateful to him and to Mr. F. N. Pierce of Liverpool for the pains they have taken in the matter. All the Plates are from drawings by Mr. Burrows, and all the notes on the genitalia are his, many of them having been submitted to Mr. Pierce for verification.

Mr. Burrows says that the dissections show a relationship to the *Erebusidæ*, to the genera *Argiva* and *Patula* in the large extensile *coremata*, dorsal of the valves; he further

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says, "I am thinking much of the *Gnathos* in your *Noctuæ*; this forms quite a feature, locates them in the direction of the *Geometræ*, removes them from the bulk of the *Noctuæ*, and it is remarkable that the species which occur in Britain should be so selected that all (except *Brephos*) should lack this feature."

The examination of the genitalia divides all those that have been dissected into six groups, as follows:—

1. *Cosmophila erosa*, Hübner, Zutr. Samml. exot. Schmett. ii. p. 19, figs. 287, 288 (1810).

Hab. America.

Valves wide compared with length.

Harpe soft and spined.

Costal arms very thin, scale-like.

*Anellus**, lateral arms smooth, not knobbed.

Coremata very small and slight, single.

Penis short and broad, cornutus delicate.

The stiffening of the eighth abdominal segment very slight. (Pl. IX. fig. 1.)

Caracas, Venezuela, Jalapa (Mexico), Newcastle (Jamaica), Sapucay (S. America).

2. *Cosmophila vanthindyma*, Boisd. Faun. Ent. Madagascar, p. 94, pl. xiii. fig. 7 (1833).

Cosmophila auragoides, Guen. Noct. ii. p. 397 (1852).

Harpe well developed on valve, rigid.

Costal arms not evident.

Anellus very pronounced, lateral arms solid, rigid, knobbed.

Coremata very voluminous, single.

Penis long and narrow, cornuti scarcely evident. (Pl. IX. figs. 2, 3.)

Dar-es-Salam, Karachi.

3. *Cosmophila edentata*, Walker, xi. p. 750 (1857).

Harpe soft and spined.

Costal arms rigid, slightly hooked.

* Passage through which the penis passes.

Anellus very pronounced, lateral arms smooth, knobbed, decorations large and continuous.

Coremata double. (Pl. IX. fig. 4.)

Queensland, Australia.

4. *Cosmophila lyona*, nov.

Harpe soft and spined.

Costal arms rigid, hooked.

Anellus pronounced, lateral arms smooth, not knobbed.

Coremata double, very voluminous.

Penis stout, one large *cornutus*. (Pl. X. fig. 5.)

Padang (Sumatra), Ternate (Moluccas).

5. *Cosmophila indica*, Guen. Noct. ii. p. 396 (1852).

Cirrædia variolosa, Walker, xi. p. 750 (1857).

Harpe soft and spined.

Costal arms strong, hooked.

Anellus with the arms smooth and straight.

Coremata double.

Penis very stout. (Pl. X. fig. 6.)

Assam, Bombay, Gooty, Palni Hills, S. India.

6. *Cosmophila dona*, nov.

Anellus very large, the valves without armature and angled (which is not the case in any of the others).

Coremata double, very voluminous.

The eighth segmental plate of the abdomen is reduced to a bar.

Penis narrow, *cornuti* scarcely evident (the penis is entirely different from any of the others). (Pl. X. fig. 7.)

Roeburne, Sherlock River, Australia.

1. *Cosmophila erosa*, Hübner, Zutr. Samml. exot. Schmett. ii. p. 19, figs. 287, 288 (1810).

Uniformly larger than the Old-World species; wings yellower, fore wing fairly uniform in colour throughout, the outer portion sometimes slightly darker than the inner; transverse lines and bands of the usual pattern, but very little

darker than the ground-colour ; hind wing uniformly pale greyish ochreous without markings.

I have many examples from Venezuela, Mexico, S. America, and Jamaica.

2. *Cosmophila xanthindyma*, Boisd. Faun. Ent. Mad. p. 94 (1833).

A darker insect, transverse lines more or less similar ; the outer portion of the fore wing (nearly the half) nearly always suffused with chocolate-brown ; hind wing grey, generally dark grey on the outer portion.

Hab. Madagascar, Africa.

3. *Cosmophila edentata*, Walker, xi. p. 750 (1857).

The discal line of the fore wing is nearly straight and at its upper end is widely apart from the antemedial line ; the upper part is bent inwards to the costa ; the stigma in the cell is pure white and circular and isolated.

Hab. Queensland, Australia.

4. *Cosmophila lyona*, nov.

♂ ♀. Fore wing markings much as in *edentata*, colour paler and yellower ; the discal line, however, is not nearly straight as in that species, but is angled inwardly at its middle ; the genitalia in some respects are similar, but differ in the formation of the anellus ; the decorations are small and bilobed, the armature of the valve is not quite the same, the eighth segment of the abdomen is much the same ; the *penis* differs somewhat, being stronger than that of *edentata*, and both are entirely different from those of the other groups.

Expanse of wings, ♂ ♀, $\frac{1}{10}$ inch.

Hab. Padang, W. Sumatra.

5. *Cosmophila indica*, Guen. Noct. ii. p. 397 (1852).

Cirrædia variolosa, Walker, xi. p. 750 (1857).

♂ ♀. Generally a smaller insect than *xanthindyma* ; the colour of the fore wing is brighter yellow, the discal band is more uniform, and the hind wing is yellowish white, generally quite uniform in colour. Guenée's type is from

"India," Walker's type N. India; it is a common form in the Khasia Hills and in Southern India.

Hab. N. India, Assam, Bombay, Gooty, Palni Hills, S. India.

6. *Cosmophila dona*, nov.

♂ ♀. Of a uniform dark lilacine-grey colour: fore wing covered with minute darker grey striations; markings chocolate-brown; a short transverse line across the median vein one-third from the base of the wing, indications of its continuance at the costa, where there are also two very minute black dots; a mark at the end of the cell, a line below it followed by a large square cluster of chocolate dots, its outer portion having a line above it which does not reach the costa and has another cluster of dots outside it; some very minute black dots between these clusters and the outer margin; cilia concolorous with the wing, with deep black spots at the interspace-ends: hind wing dark grey, with the outer portions with darker suffusion; cilia white; palpi ochreous grey, whitish beneath; head and body concolorous with the wings. Underside uniform pale grey, rather pale on the hind wing; pectus and sides of the abdomen whitish; the female has only very faint indications of the markings; the angle in the middle of the outer margin of the fore wing is very slight.

Expanse of wings, ♂ 1, ♀ $1\frac{3}{10}$ inch.

Hab. Roebourne, W. Australia.

By the genitalia it is obviously a very distinct species, almost worthy of a separate genus, but the general build in so many other respects denotes close affinity.

7. *Cosmophila milva*, nov.

♂. Fore wing ochreous-fawn colour, irrorated with very minute grey atoms; transverse lines brown, first subbasal sinuous, double; second antemedial, not sinuous, angled outwards on the median vein; third postmedial, straight from the hinder margin to near the upper end of the cell; fourth from a white costal spot, halfway between the third line and the outer margin, is slightly bent outwards near the costa, then nearly straight to vein 4, where it is angled outwards, then turns inwards on to the next lower vein, some dark shading outwards containing a slightly darker sinuous transverse band which gradually fades away hindwards; cilia

dark brown: hind wing ochreous grey, outer marginal line brown; cilia whitish, with brown tips: palpi brown; body concolorous with the wings. Underside uniform pale ochreous brown; hinder marginal space of fore wing pale, an outwardly curved brown line like a half-circle from the costa before the apex, and an outwardly curved discal line on the hind wing.

Expanse of wings, ♂, $1\frac{3}{10}$ inch.

Hab. Gilolo Isl., North Moluccas (*Doherty*).

XXXI.—*New Lycenids and Hesperids and Two new Species of the Noctuid Family Acontiidæ.* By Colonel C. SWINHOE, M.A., F.L.S., &c.

Family Lycenidæ.

Lycænopsis trita, nov.

♂. Upperside cerulean-blue, similar in colour to *L. ladonides*, de l'Orza*, which it very much resembles; marginal lines of both wings black; cilia white. Underside cream-white, with a few blue irrorations at the base of both wings and along the abdominal margin of the hind wing: fore wing with a pale brown lunule closing the cell; five discal linear brown marks, four in a line, the upper one subcostal and well inwards; a double series of pale brown marks on the outer margin, the inner series lunular, the outer composed of triangular spots: hind wing with the outer margin similarly marked; a pale brown line closing the cell, a black spot on vein 6 near the base, and one below it in the cell, near the origin of vein 2; a subcostal black spot near the apex of the wing; a curved series of black spots in interspaces 4, 3, 2, and 1, two close together and well outwards in the interno-median interspace, and three black spots on the abdominal margin. Antennæ black with white rings; head and body above blue-black, white on the underside, head with black and white stripes; eyes ringed with white; palpi

* Lep. Japan, p. 20 (1869).